

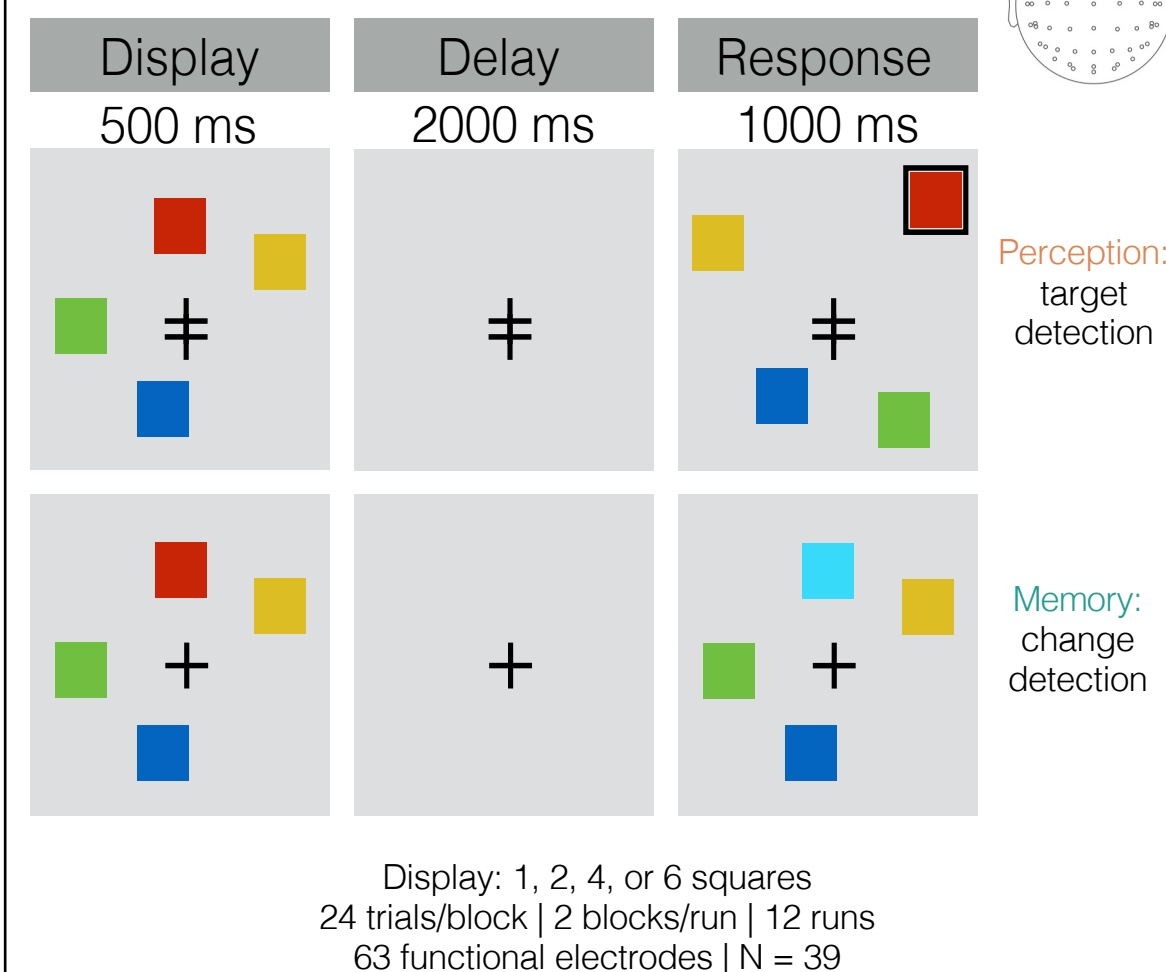
Introduction

- Prior work suggest an overlap between domains of memory and attention (Long et al., 2018; Woodman et al., 2022)
- Working memory is at the interface between external attention (focus on sensory information in the environment) and internal attention (focus on stored information) (Chun et al., 2011)
- Memory encoding and memory retrieval brain states may be linked with external and internal attention, respectively (Smith et al., 2022; Logan et al., 2021; Long, 2023)

Hypothesis

- External attention recruits the encoding state and internal attention recruits the retrieval state

Working memory task



References

Chun, M. M., Golomb, J. D., & Turk-Browne, N. B. (2011). A taxonomy of external and internal attention. *Annual Review of Psychology*, 62, 73–101.

Logan, G. D., Cox, G. E., Annis, J., & Lindsey, D. R. B. (2021). The episodic flanker effect: Memory retrieval as attention turned inward. *Psychological Review*, 128(3), 397–445.

Long, N. M. (2023). The intersection of the retrieval state and internal attention. *Nature Communications*, 14(3861). doi: <https://doi.org/10.1038/s41467-023-39609-9>

Long, N. M., Kuhl, B. A., & Chun, M. M. (2018). Memory and attention. In J. T. Wixted (Ed.), *Steven's handbook of experimental psychology and cognitive neuroscience* (Fourth ed.). John Wiley & Sons, Inc.

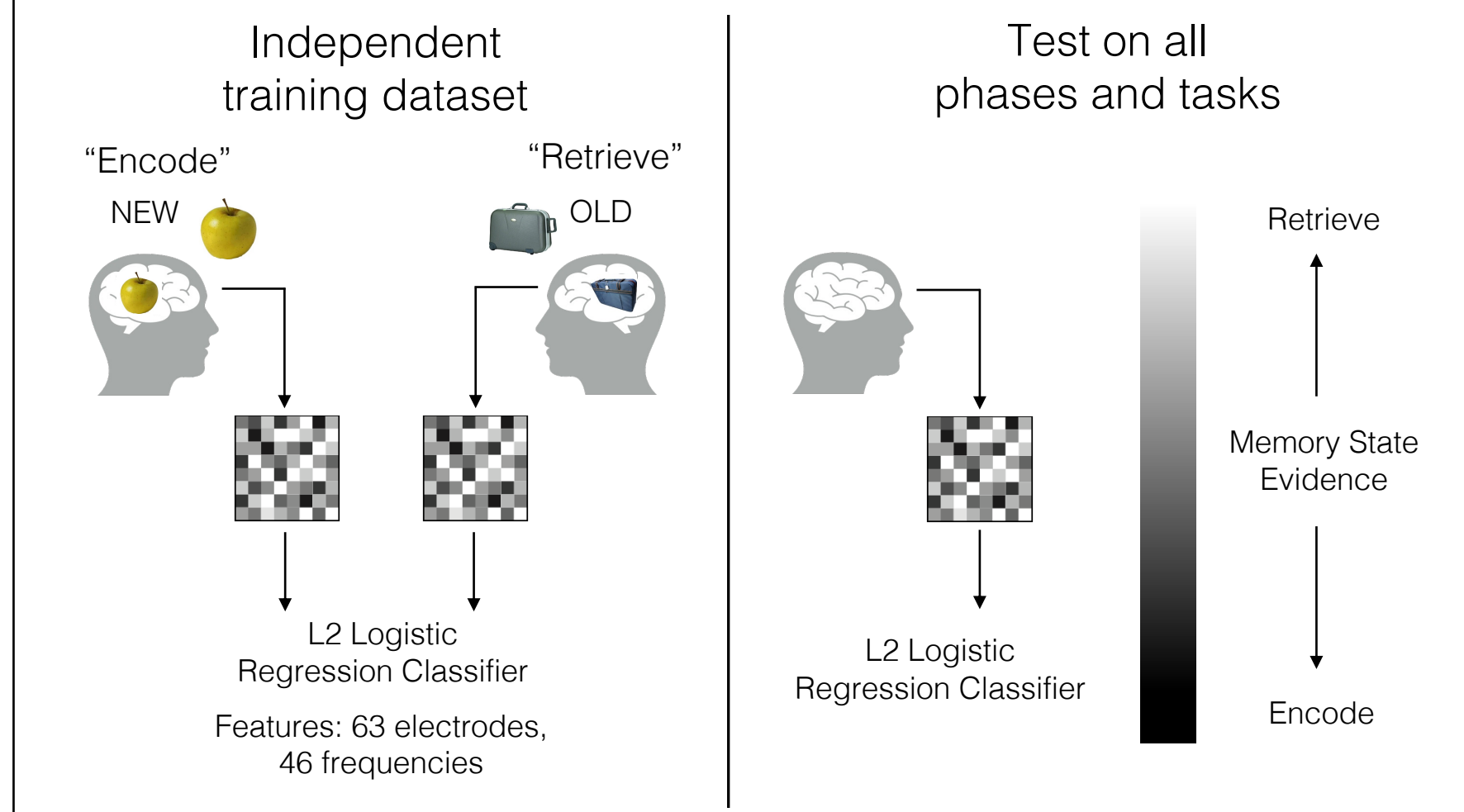
Woodman, G. F., Wang, S., Sutterer, D. W., Reinhart, R. M. G., & Fukuda, K. (2022). Alpha suppression indexes a spotlight of visual-spatial attention that can shine on both perceptual and memory representations. *Psychonomic Bulletin & Review*, 29, 681–698.

Acknowledgements

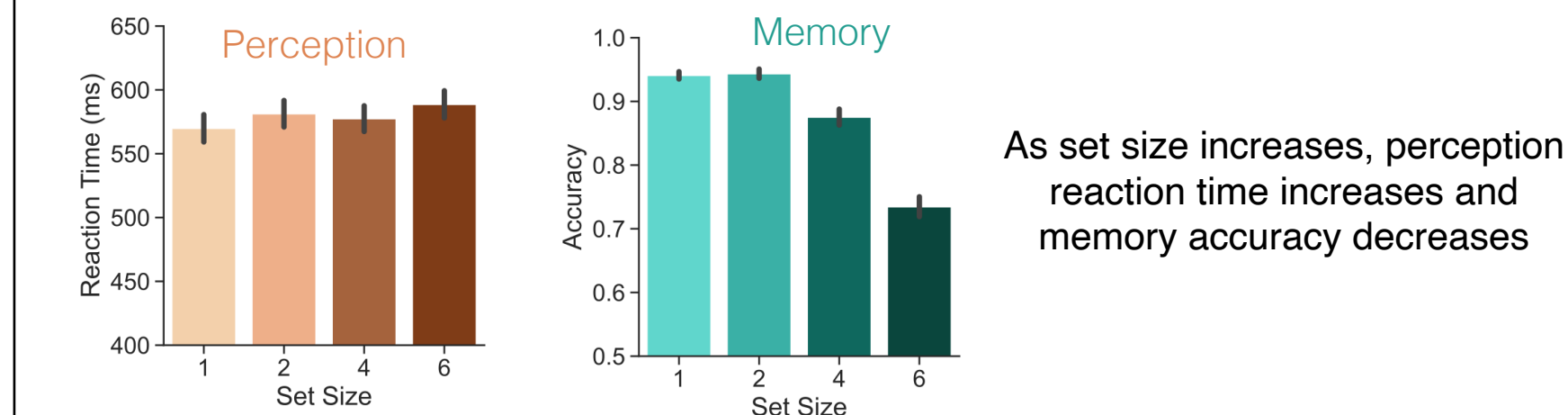
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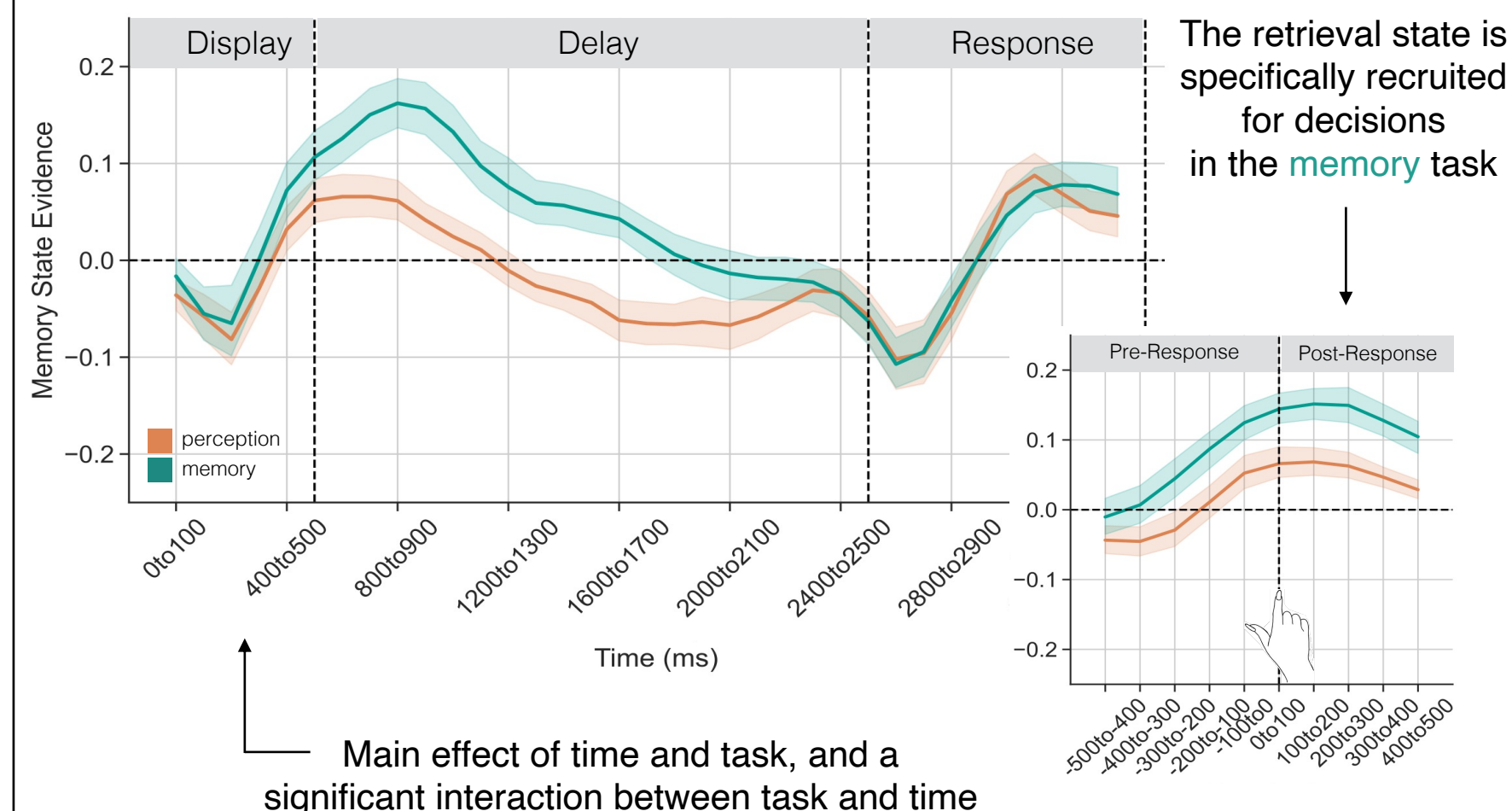
Multivariate pattern analysis approach



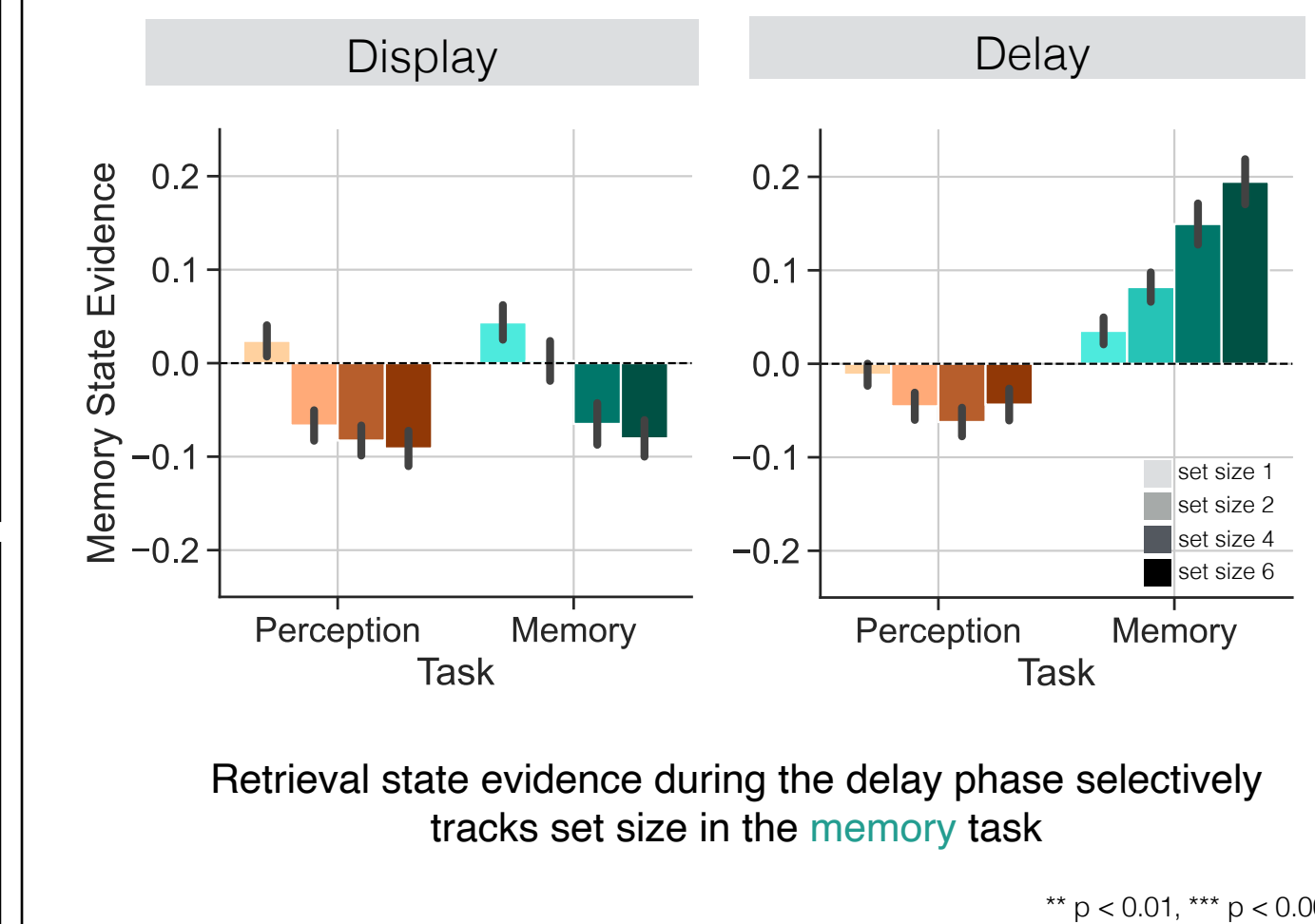
Set size modulates task performance



Memory state engagement varies as a function of task over time



Memory brain states are modulated by working memory demands and load



Summary

- The demand to maintain information over a delay recruits the retrieval state (greater memory state evidence) and is further modulated by working memory load
- Memory brain states directly connect with the internal/external axis of attention via a working memory paradigm with and without memory demands

Future directions

- Explore how encoding and retrieval states are engaged during memory integration processes